

REMARKS

This amendment after final rejection should be entered because it rewrites into independent form claims already indicated to be allowable and makes a minor non-substantive amendment to claim 33.

The allowance of claims 26, 30 and 31 and the indication of allowability of claims 15 to 17 and 29 are appreciated. Claims 15 to 17 and 29 have been rewritten into independent form and should be in clear condition for allowance. The following comments regarding the other claims are not intended to apply to or limit the claims that have been allowed or indicated to be allowable.

As an initial matter, the statement in the Action at page 2 that fly ash entrained in the flue gas captures mercury is not claimed is in error. The claims require: “adsorbing the mercury in the flue gas with the fly ash” and “entraining the fly ash into flue gas generated by the combustion” as stated in independent claim 1; “adsorbing the elemental mercury in the flue gas by the active carbon in the fly ash” as stated in independent claim 19; “fly ash is entrained in the flue gas and the fly ash has active carbon to adsorb the mercury released in the flue gas” as stated in independent claim 33; and “adsorbing the mercury in the flue gas with the fly ash” as stated in independent claim 35. Accordingly the claims do recite that fly ash both be in the flue gas and adsorb mercury.

The rejection of claims 1 to 14, 18 to 25, 27, 28, and 32 to 38 as being obvious over Rini et al (U.S. Patent No. 5,315,939) in view of Pennline is traversed.

The invention resides in part in the recognition that active carbon in fly ash may be used advantageously to adsorb mercury and that by intentionally increasing the amount of active carbon to enhance the adsorption of mercury can be used as a technique to remove mercury in flue gas. Conventional wisdom is to reduce active carbon in fly ash and to capture mercury with sorbents or other techniques. The present invention is contrary to conventional wisdom and the applied prior art.

The obviousness rejection relies on prior art that: (i) does not recognize that mercury is adsorbed by carbon rich fly ash, (ii) does not suggest that mercury adsorption by carbon fly ash is a means to remove mercury from flue gas, and (iii) teaches away from the invention by suggesting other means for mercury removal from fly ash.

Rini discloses a Low- NO_x firing system for a coal fired furnace, but does not disclose or suggest any means for capturing mercury released by the combustion or processing fly ash generated during the combustion. There is no suggestion in Rini that mercury released during combustion is captured by carbon rich fly ash generated during the combustion or that the fly ash with captured mercury should be processed to reduce the amount of mercury released to the atmosphere.

The Action states that Rini inherently discloses mercury released by coal combustion will be adsorbed by carbon rich fly ash generated by the combustion.¹ For Rini to inherently disclose releasing mercury, there must be no way to operate Rini's

¹ The Action acknowledges that Rini does not expressly disclose or address the release of mercury during coal combustion or that released mercury is adsorbed by active carbon.

combustion system without releasing mercury. Given that coals are available with no or low mercury content and that coal cleaning systems are available to remove mercury from coal, it is not inherent that Rini's combustion system will release a substantial amount of mercury.²

Further, the rejection relies on the false legal premise that a purportedly inherent feature of a prior art reference may be relied on to establish obviousness. "Inherency and obviousness are distinct concepts." *Kloster Speedsteel AB v. Crucible Inc.*, 230 USPQ 81, 88 (Fed. Cir. 1986). If the inherent feature would not have been obvious to a person of ordinary skill at the time, then it is improper to rely on the inherent feature in support of an obviousness rejection. *Kloster*, 230 USPQ at 88 (obviousness argument failed because of a "failure to establish at trial that inherency would have been obvious to those skilled in the art when the invention of claim 4 was made."). There is no finding made in the Action that a finding that a person of ordinary skill in the art would recognize that the combustion system taught by Rini that released mercury would be adsorbed by the fly ash. Accordingly, the rejection should be withdrawn for at least the reasons that: (i) Rini does not inherently disclose releasing mercury during coal combustion and (ii) there is no finding that a person of ordinary skill in the art would have recognized that Rini inherently discloses mercury being released during coal combustion and adsorbed on fly ash.

² Rini discloses that Eastern US pulverized bituminous solid fuel coal was burned and there is no indication in Rini as to whether the fuel was cleaned to reduce mercury content. *See* Rini, col. 21, lns. 33-59. It is entirely

Pennline teaches away from the claimed invention by suggesting that an adsorbent is injected upstream of a particulate control device (34) as a means for capturing mercury. Pennline teaches the use of a "thermally activated sorbent stream 48" which is injected in the flue gas downstream of combustion to capture mercury. The sorbent stream includes fly ash removed from the combustion gases and cooled separately from the gas stream and may include chemical or physical treatments to enhance its reactivity with mercury. Pennline, column 4, lines 30-40. Pennline teaches that the injection of an adsorbent is sufficient to capture mercury and thereby teaches away from the claimed invention of generation of carbon rich fly ash in the combustion zone to capture mercury.

Pennline if applied to Rini would modify the Rini furnace such that fly ash generated during combustion is extracted from the flue gas stream, treated and reintroduced downstream of combustion. This is contrary to the claimed invention. Because the combination of Rini and Pennline does not teach or suggest the claimed invention, the rejection should be withdrawn.

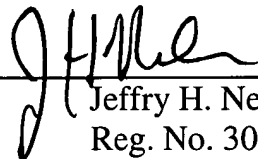
All claims are in good condition for allowance. If any small matter remains outstanding, the Examiner is requested to telephone applicants' attorney. Prompt reconsideration and allowance of this application is requested.

possible that coal with low or reduced mercury content was burned in the Rini combustion system such that the levels of released mercury were minimal.

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Respectfully submitted,

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